

# High Flow Nasal Cannula in Pediatric Intensive Care Unit: Still an Open Question [Letter]

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## Dear editor

We have read with great interest the article published by Asseri et al which explores the indications and safety of high flow nasal cannula (HFNC) use in Pediatric Intensive Care Unit (PICU) and determine the predictors of its failure in Saudi Arabia.<sup>1</sup>

The study identified positive clinical characteristics and laboratory tests in most of the children after 8 hour of the use of HFNC in pediatric patients and the main indications used were respiratory distress secondary to bronchopneumonia, bronchiolitis, status asthmaticus, and post-extubation. The failure of HFNC was found in one fourth of the patients participated in the study.<sup>1</sup> However, we believe certain aspects of this study need to be addressed.

First, the study defined HFNC success in pediatric by the improvement seen in vital signs and laboratory tests after 8 hour and 48 hour of HFNC use. However, it has not mentioned based on what evidence 8 hour and 48 hour has been selected.

Secondly, the study assessed the age, gender, associated chronic diseases, indications of HFNC, previous admission to ICU along with other parameters, but it did not assess the size/weight of the patient. The distending airway pressure caused by HFNC appears to be dependent on the weight of the patient since the flow rate can be estimated by the patient's weight with starting tolerating flow rate of 1–2 L/kg/min, followed by an increase of 0.5L/kg/min for patients younger than 24 months of age.<sup>2,3</sup> Feldman et al<sup>4</sup> found that weight can be considered as a factor to determine the success or failure of using HFNC. They reported that pediatric patient whose age is less than 2 year-old and weighed >5kg were 2.6 times more likely to succeed on the pediatric ward compared with those weighing <5 kg (aOR: 2.6 (CI 1.3–5.2, p<0.01).

Third, from methodology point of view, we consider relevant that authors could describe the range of flow rate that has been used for HFNC in the study. It only stated that the maximum flow rate was 30 L/min according to the international guidelines of HFNC in pediatric patients. Knowing the flow rate range is important since the positive distending pressure will increase as the flow rate increases which may help to explore the causes of complications like air leak syndrome that occurs in some patients in the study.<sup>2</sup> It also did not mention the manufacture of the HFNC and its characteristics like the diameter of nasal cannula being used, which is considered as a factor that increases the distending airway pressure caused by HFNC.<sup>2</sup> Kwon<sup>3</sup> summarized the recommended flow rate and cannula size of HFNC for pediatric patients in his article.

In regards to data analysis, the study did not mention if Levene's homogeneity test has been assessed before comparing the HFNC failure group with that of HFNC non-

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failure group when independent *t*-test was used to make sure that the two groups were similar in the baseline data. It will be interesting also to subdivide the group using HFNC based on the primary diagnosis and compared it with the other group who have the same primary diagnosis but have not used HFNC.

In conclusion, addressing these points will help bolster the results and further clinical trials are needed to confirm the observations of this study.

## Disclosure

The authors report no conflicts of interest in this communication.

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